Claims 1-16 remain in the application.

In the second paragraph on page 2 of the above-identified Office action, claims 1, 4-13 and 15 have been rejected as being unpatentable over Kramer et al. (U.S. Patent No. 5,080,056) in view of Sailer et al. (U.S. Patent No. 5,644,828) and Hammeke (U.S. Patent No. 4,724,299) under 35 U.S.C. § 103.

As will be explained below, it is believed that the claims were patentable over the cited art in their original form and the claims have, therefore, not been amended to overcome the references.

Before discussing the prior art in detail, it is believed that a brief review of the invention as claimed, would be helpful.

Claim 1 defines a process for producing a wear-resistant, tribological cylinder bearing surface (16) for a piston (41) running in a cylinder (20) of a crankcase (40) of an internal-combustion engine, the process includes the steps of:

- positioning a laser (10) such that a longitudinal axis (26) of the laser (10) is substantially coaxial to a cylinder (20) of a crankcase (40) of an internal-combustion engine;

- rotating the laser (10) about the longitudinal axis (26) of the laser (10) and simultaneously advancing the laser (10) in a direction of the longitudinal axis (26) of the laser (10);
- feeding a powdery material through the laser (10) and directing a jet (13) of the powdery material to a cylinder bearing surface (16) of the cylinder;
- deflecting a laser beam (22) to an impact region (14) where the jet (13) of the powdery material impinges on the cylinder bearing surface (16) and guiding the jet (13) of the powdery material such that at least part of the jet (13) of the powdery material passes through the laser beam (22); and
- at least partially melting, with the laser beam (22), a surface of the impact region (14) such that the surface of the impact region (14) is at least partially melted before the powdery material impinges on the surface of the impact region.

The Examiner correctly stated that Kramer teaches coating the interior walls of cylinder bores by thermal spraying. However, Kramer does not teach the use of a laser.

More specifically, Kramer does not disclose the steps of:

- positioning a laser such that a longitudinal axis of the laser is substantially coaxial to a cylinder of a crankcase of an internal-combustion engine;
- rotating a laser about the longitudinal axis of the laser and simultaneously advancing the laser in a direction of the longitudinal axis of the laser;
- feeding a powdery material through the laser;
- deflecting a laser beam to an impact region where the jet of the powdery material impinges on the cylinder bearing surface and guiding the jet of the powdery material such that at least part of the jet of the powdery material passes through the laser beam; and
- at least partially melting, with a laser beam, a surface of the impact region such that the surface of the impact region is at least partially melted before the powdery material impinges on the surface of the impact region, as recited in claim 1 of the instant application.

The Examiner stated that Sailer teaches that plasma spraying, arc spraying and laser spraying are all equivalent forms of thermal spraying. The Examiner seems to refer to the general statement in column 6, lines 19-23 of the patent to Sailer. It is noted that the subject matter of claim 1 does not simply mention the use of laser spraying in general terms but defines in very specific terms how the laser is positioned, how the

laser is moved and how the beam of the laser is directed. None of these specific limitations of claim 1 is taught by Sailer.

More specifically, Sailer does not teach the steps of:

- positioning a laser such that a longitudinal axis of the laser is substantially coaxial to a cylinder of a crankcase of an internal-combustion engine;
- rotating a laser about the longitudinal axis of the laser and simultaneously advancing the laser in a direction of the longitudinal axis of the laser;
- feeding a powdery material through the laser and directing a jet of the powdery material to a cylinder bearing surface of the cylinder;
- deflecting a laser beam to an impact region where the jet of the powdery material impinges on the cylinder bearing surface and guiding the jet of the powdery material such that at least part of the jet of the powdery material passes through the laser beam; and
- at least partially melting, with a laser beam, a surface of the impact region, as recited in claim 1 of the instant application.

The Examiner stated that it would have been obvious to utilize laser spraying as a method of thermal spraying in Kramer

because Sailer teaches that plasma spraying and laser spraying are equivalent.

It is noted that Sailer is concerned with repairing printing press cylinders. It is believed that a person of skill in the art, when faced with the object of producing a wear-resistant cylinder bearing surface for an internal combustion engine, would not consult the patent to Sailer because the tribological requirements for printing cylinders are entirely different from the tribological requirements for internal combustion engines.

However, for the sake of the argument, even if a person of skill in the art combined the teachings of Kramer, Sailer and Hammeke, it would still not be obvious to provide the specific steps of claim 1 as will be explained below.

On page 3 of the Office action, the Examiner correctly stated that Sailer fails to teach how a method of laser spraying is performed. The Examiner therefore cited the patent to Hammeke in order to show how a powdery material is fed through a laser.

It is noted that the method of Hammeke is quite different from the method of the present invention. More specifically, Hammeke does not disclose the steps of:

- positioning a laser such that a longitudinal axis of the laser is substantially coaxial to a cylinder of a crankcase of an internal-combustion engine;
- rotating a laser about the longitudinal axis of the laser and simultaneously advancing the laser in a direction of the longitudinal axis of the laser; and
- deflecting a laser beam to an impact region where the jet of the powdery material impinges on a cylinder bearing surface, as recited in claim 1 of the instant application.

It is noted that, the laser spray nozzle assembly of Hammeke is a stationary device wherein only the body B can be adjusted in the axial direction. The laser spray nozzle assembly of Hammeke has horizontal coolant inlet pipes 56, 66 and horizonal coolant outlet pipes 60, 68 as well as a horizontal powder supply pipe 46 and a horizontal gas feed line 101. These horizontal lines are a clear indication that the laser source of the laser spray nozzle assembly is not configured to rotate. The patent to Hammeke only mentions that the nozzle body B of the laser spray nozzle assembly can be adjusted axially. Hammeke does not teach advancing the laser source along the axial direction and simultaneously rotating the laser source. Hammeke teaches moving the workpiece W relative to the laser nozzle (col. 6, lines 32-34). In contrast, claim

1 of the present application teaches rotating the laser and simultaneously advancing the laser along the workpiece.

The Examiner's argumentation for rejecting independent claims 1, 13 and 15 is based on a combination of three prior art documents including a patent on how to repair printing press cylinders. It is believed that the fact that three documents are needed to reject claims 1, 13, and 15 is already an indication that the combination of limitations of these claims is not made obvious by the prior art teachings.

It is further believed that the argumentation to reject claims 1, 13 and 15 includes hindsight judgments that are based on the knowledge of the present invention. It is noted that the motivation to provide the combination of limitations as defined in claims 1, 13, and 15 must come from the prior art teaching itself.

It is well settled that almost all claimed inventions are but novel combinations of old features. The courts have held in this context, however, that when "it is necessary to select elements of various teachings in order to form the claimed invention, we ascertain whether there is any suggestion or motivation in the prior art to make the selection made by the applicant". Interconnect Planning Corp. v. Feil, 227 USPQ 543, 551 (Fed. Cir. 1985). "Obviousness can not be

established by combining the teachings of the prior art to produce the claimed invention, absent some teaching, suggestion or incentive supporting the combination". In re Bond, 15 USPQ2d 1566, 1568 (Fed. Cir. 1990). "Under Section 103 teachings of references can be combined **only** if there is some suggestion or incentive to do so." ACS Hospital Systems, Inc. v. Montefiore Hospital et al., 221 USPQ 929, 933, 732 F.2d 1572 (Fed. Cir. 1984) (emphasis original). "Although a reference need not expressly teach that the disclosure contained therein should be combined with another, the showing of combinability, in whatever form, must nevertheless be '**clear and particular.**'" Winner Int'l Royalty Corp. v. Wang, 53 USPQ2d 1580, 1587, 202 F.3d 1340 (Fed. Cir. 2000) (emphasis added; citations omitted); Brown & Williamson Tobacco Corp. v. Philip Morris, Inc., 56 USPQ2d 1456, 1459 (Fed. Cir. Oct. 17, 2000).

Applicants believe that the prior art does not provide any suggestion or motivation to combine the limitations as defined in claims 1 , 13 and 15 and certainly there is no "clear and particular" teaching or suggestion in Sailer or Hammeke to incorporate the features of a rotating and simultaneously advancing laser as well a beam-deflecting device in the coating device of Kramer.

Neither Kramer nor Sailer nor Hammeke can suggest that the powder feed device and the laser should move together as a movable unit. Hammeke only teaches a powder feed through a stationary laser apparatus. There is no suggestion in the prior art that a movable unit including a laser and a powder feed device and additionally a beam-deflecting device should be used in the coating device of Kramer. The only teaching that the prior art can provide is the general statement in col. 6, lines 20-23 of Sailer, that simply lists a number of coating methods which may be used as alternatives. Only in hindsight is it possible to argue that the prior art suggests providing a beam-deflecting device and a powder feed device that is movable together with a rotating and simultaneously advancing laser in the device of Kramer, especially since the laser assembly of Hammeke does not rotate or advance axially.

Further, none of the prior art documents can suggest the step of deflecting a laser beam or a beam-deflecting device. The Examiner argues that providing a beam-deflecting device would have been obvious in view of Fig. 2 of Kramer which shows that a spray 14 of alloy is applied to the cylinder wall 12. Again, it is believed that only in hindsight is it possible to argue that emitting a spray 14 of alloy through a radial hole in a coating head 17 would suggest providing a laser beam-deflecting device.

In summary, the combination of method steps in claim 1 and the corresponding structural limitations in claims 13 and 15 are not made obvious by a combination of Kramer, Sailer and Hammeke. It is accordingly believed to be clear that none of the references, whether taken alone or in any combination, either show or suggest the features of claim 1, 13, or 15. Claims 1, 13, and 15 are, therefore, believed to be patentable over the art and since all of the dependent claims are ultimately dependent on claim 1, 13, or 15, they are believed to be patentable as well.

In view of the foregoing, reconsideration and allowance of claims 1-16 are solicited.

Please charge any fees which might be due with respect to Sections 1.16 and 1.17 to the Deposit Account of Lerner and Greenberg, P.A., No. 12-1099.

Respectfully submitted,

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